Portfolio Approach to Risk Assessment

Problem: Timely and effective chemical risk assessments to inform public health decisions and provide transparency and certainty to the regulated community have been difficult to produce.

Background:

- EPA, states, and others use chemical risk assessment as a scientific foundation for decisions about environmental exposures and public health.
- As such, they have significant implications to the protection of environment and public health, as well as to the economy and sustainable development.
- For this reason, as a science, risk assessment is the subject of considerable controversy.
- There are currently tens of thousands of chemicals in commerce, with other 'legacy' chemicals found in Superfund sites, and still others are emitted from sources in different industries.
- Traditional risk assessments have relied on animal toxicity testing data to inform hazard evaluation – these type of data are available for only a small subset of chemicals (~500).
- More and more human relevant data are being generated through high throughput toxicity testing and other novel technologies.
- TSCA's new mandate for alternatives to animal testing provides exciting new possibilities.
- While the new data presents many new possibilities for better risk assessments, the process for scientific consensus on how to use these data is in its infancy and many 'acceptance' barriers have to be overcome.
- Many advisory committees (such as the NAS), have provided recommendations for overcoming barriers to accelerating the pace of chemical risk assessment by:
    - developing ways to use new data from high throughput and other test methods to quickly provide information on chemicals' effects (NRC 2007; NRC 2017);
    - streamlining the lengthy assessment development processes (GAO 2008; GAO 2011);

Approach/Recommendations: A portfolio approach to risk assessment offers a continuum of products ranging from rapid screening of chemicals to the more complex scientific assessment of a large body of evidence from human and animal studies.

The proposed approach will increase public health protection by:

- moving away from a 'one-size-fits-all' approach to chemical risk assessment towards a spectrum of assessment products to meet specific decision contexts;
- facilitating the incorporation of new science into risk assessment and decision-making;
- enabling assessments to be better tailored to meet needs of decision makers;
- increasing the number of chemicals that can be evaluated for their effects on human health by utilizing constrained resources in the most efficient manner.

Takeaway: This portfolio approach offers a nimble, flexible and efficient way to draw on new data streams, develop a continuum of risk assessment products, better meet the needs of stakeholders and decision makers. It also significantly increases the speed, transparency and access to assessment products and democratizes the process for all stakeholders impacted by decisions.

Opportunity: The approach could be piloted on the PFAS class of chemicals, which differ markedly in the amount of available information assess risks by traditional approaches.

References

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